Department of Planning and Zoning
149 Church Street, City Hall
Burlington, VT 05401-8415
Phone: (802) 865-7188
Fax: (802) 865-7195
www.burlingtonvt.gov/pz

Zoning Permit Application

Use this form for ALL zoning permit applications. See the relevant checklist for specific requirements.

PROJECT LOCATION ADDRESS: Riverside Ave., Riverwalk Trail, Salmon Hole to Riverwalk Park

PROPERTY OWNER*: Various, WVPD has trail easement *If condominium unit, written approval from the Association is also required	**OWNER'S REPRESENTATIVE:** Tim Larned, WVPD 046-3-085-000
POSTAL ADDRESS: 1 Ethan Allen Homestead	POSTAL ADDRESS:
CITY, ST, ZIP: Burlington, VT 05408	CITY, ST, ZIP:
DAY PHONE: 802-863-5744	DAY PHONE: 802-373-0743
EMAIL: timlarned@wvpd.org	EMAIL:
SIGNATURE: Yuriko Jakobsen I am the owner and I duly authorize the owner's representative (if applicable) to act on my behalf for all matters pertaining to this zoning permit application.	**SIGNATURE:** T. Larned (FOR WVPD) WVPD PARKS MANAGER

Description of Proposed Project: Trail improvements along the Riverwalk Trail, which connects Salmon Hole Park to Riverwalk Park on Intervale Rd. Including erosion control check steps, new routed trail where old trail has fallen in river, and the replacement of a 40' bridge

Existing Use of Property: ☐ Single Family ☐ Multi Family: #___ Units ☒ Other: hiking

Proposed Use of Property: ☐ Single Family ☐ Multi Family: #___ Units ☐ Other:

Will 400 sq ft or more of land be disturbed, exposed and/or developed? Yes ☐ No ☒
(If yes, you will need to provide the 'Erosion Prevention and Sediment Control Plan' questionnaire with a site plan)

For Single Family & Duplex, will total impervious area be 2500 sq ft or more? Yes ☐ No ☒
(If yes, you will need to provide the 'Stormwater Management Plan' questionnaire with a site plan)

Are you proposing any work within or above the public right of way? Yes ☐ No ☒
(If yes, you will need to receive prior approval from the Department of Public Works)

Estimated Construction Cost (value)*: $ 20,000
(*Estimated cost a typical contractor would charge for all materials and labor, regardless of who physically completes the work)

- Within 30 days of submission, the permit application will be reviewed for completeness, and, if complete, will be processed administratively or referred to a board for review. All permit approvals or denials are subject to an appeal period (15 days for administrative permit; 30 days for board permit).
- A building (and/or electrical, mechanical, plumbing, curb cut) permit will also be required. Contact the Department of Public Works at 802-863-9094 to inquire.
- Please ask for assistance if you have any questions about filling out this form. Call the Planning and Zoning at 802-865-7188, or visit the office in the lower level of City Hall, 149 Church Street.

Office Use Only: Zone: _____ Eligible for Design Review? _____ Age of House _____ Lot Size _____

Type: SN___ AW___ FC___ BA___ COA 1 ✓ COA 2___ COA 3___ CU ✓ MA___ VR___ HO___ SP___ DT___ MP___

Check No. 1497 Amount Paid $230 Zoning Permit # 13-079CA/CU

Riverwalk Trail Improvements- Transportation Enhancement and RTP 2013

Work will be done by: Winooski Valley Park District, Timber and Stone Construction, LLC. and the Vermont Youth Conservation Corps.

Bold #'s indicate worksite #/ location on map

#1 Check Steps/ Waterbars

- these are for erosion control measures where the trail repeatedly has been washed out. 2 additional 6"x6"x8' Waterbars will be added at an angle appropriate to the trail for shedding water. Check steps will be added every 10', or as necessary, these will help to slow water running down the trail and help to retain material.

#2 Re-route Trail ~65', Build (5) 8' sections of Puncheon

- trail here needs to be re-routed to avoid a major washout on bank. Brush and small trees will be removed from treadway and it will be raked free of organic materials. New puncheon will be built to keep hikers out of the water from discharge pipe. Puncheon will allow water to still flow freely. The old trail will be brushed in with nearby materials (leaves, branches, etc.) to encourage walking on new trail. New trees will also be planted along the edge of the river.

#3 Re-route trail ~80'

- trail here has either already fallen into the river or is very close. New trail will be approximately 10' from the river's edge. Old trail will be brushed in with native materials found on site to ensure hikers know which path to take. New trees will also be planted in old path. Old metal and trash will also be removed.

#4 Steps

- small slope. (2 or 3) 6"x6"x3' Pressure treated steps will be set into the slope. These will have (2) 3' lengths of rebar in them to secure them in the ground

#5 Check Steps/ Puncheon

- the original trail was washed away in this area. Now the trail goes over a small hill. There will be a set of steps on each side of the hill. We hope to reclaim materials from dismantling a bridge on site and use these to build the new steps. If this material is not useable, 6"x6" Pressure treated will be used. At the base of the North side of the hill approximately 40' of Puncheon will be constructed to keep hikers out of wet area as they approach the bridge

#6 Timber Bridge

- old bridge suffered damage during Tropical Storm Irene. It was displaced from its original location and the alignment of the trail was altered. We plan to remove this bridge, re-use as much of the material as possible in the construction of the puncheon and check steps previously mentioned, and build a new bridge in this location. Timber and Stone, LLC will be leading the construction portion of the bridge.

***** The original plan was for the stringers of this bridge to be 40' steel I-beams, due to the location of the bridge, and the difficulty in getting the beams to the site, we are now

looking at building 40' stringers with mulitiple 2" x14" x 16' Pressure Treated Lumber, glued and lag bolted together. All other aspects of the bridge will remain the same.

#7 12' Bridge

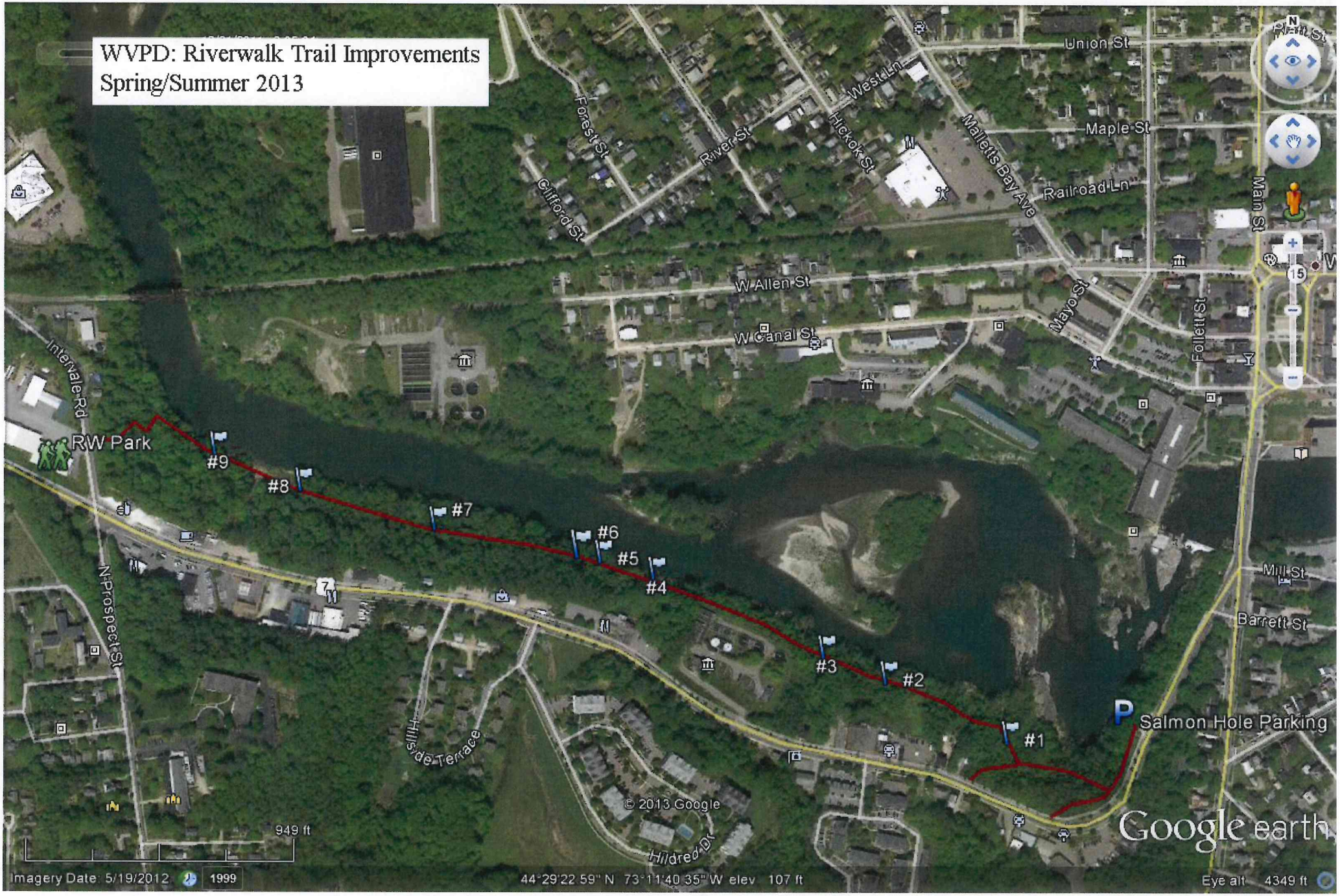
- will be built by the VYCC. Small, seasonal stream crossing. See plans with photo of Worksite #7.

#8 Steps

- (3) 3' 6"x6" steps will be dug into the slope and anchored with 3' sections of rebar

#9 12' Bridge

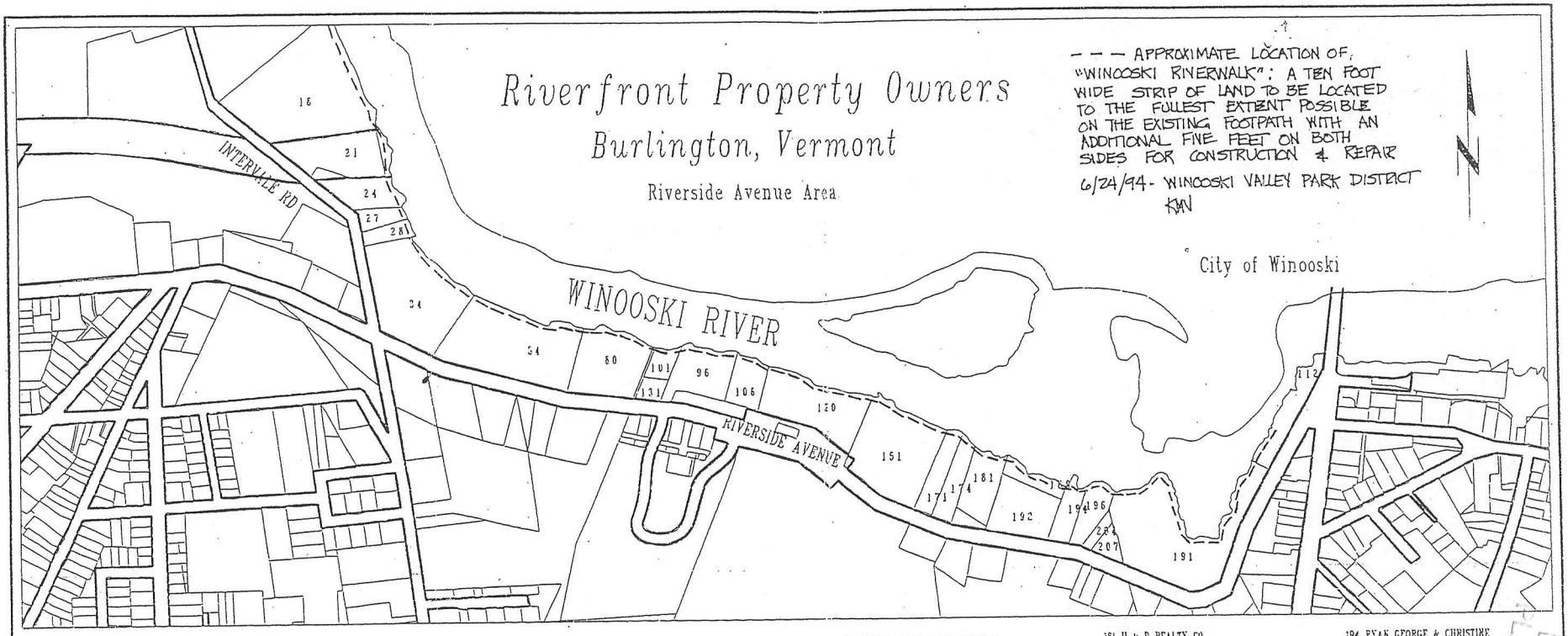
- will be same design as worksite #7


WVPD: Riverwalk Trail Improvements
Spring/Summer 2013
Union St
West Ln
Forest St
River St
Hickok St
Mallets Bay Ave
Maple St
Railroad Ln
Main St
Clifford St
W Allen St
W Canal St
Mayo St
Follett St
Interval Rd
RW Park
#9
#8
#7
#6
#5
#4
#3
#2
#1
N Prospect St
Hillside Terrace
Hildred Dr
Mill St
Barrett St
Salmon Hole Parking
© 2013 Google
949 ft
Google earth
Imagery Date 5/19/2012
1999
44°29'22.59" N 73°11'40.35" W elev 107 ft
Eye alt 4349 ft

JUL 1 2 1994

998 629

EXHIBIT A



18 CALKINS RENA E
180 INTERVALE RD
BURLINGTON VT 05401

21 Central Vermont Railway
M. J. Olmstead, Mgr.
2 Federal Street
St. Albans, VT 05478

34 RYAN MICHAEL L & THERESA P
147 NO PROSPECT ST
BURLINGTON VT 05401

27 BOIVIN LAWRENCE E & RUTH A
44 INTERVALE RD
BURLINGTON VT 05401

28 BOIVIN LAWRENCE E & RUTH A
44 INTERVALE RD
BURLINGTON VT 05401

54 CHAMPLAIN OIL CO INC
P O BOX 2126
SAN REMO DR
SO BURLINGTON VT 05403

54 RIES GORDON L & FRANCES J
96 LOPES AVE
BURLINGTON VT 05401

60 William Hunt

96 BURLINGTON CITY OF
STREET DEPT

101 BURLINGTON CITY OF
STREET DEPT

106 DISPIRITO LOUIS P & RIETA B
365 RIVERSIDE AVE
BURLINGTON VT 05401

112 BURLINGTON CITY OF
ELECTRIC DEPT

120 POWELL DAVID N
317 RIVERSIDE AVE
BURLINGTON VT 05401

131 WINTER WILLIAM W & IRENE L
BOX 311 R D 32
WILLISTON VT 05495

151 BURLINGTON CITY OF
WATER RESOURCES DEPT

171 BURLINGTON CITY OF
WATER RESOURCES DEPT

174 L T H ASSOCIATES
410 SHELBURNE RD
SO BURLINGTON VERMONT 05403

181 H & D REALTY CO
DAVID HOLMES ET AL
5 ELIZABETH ST
SO BURLINGTON VT 05403

189 NEWTON GEORGE & JOANNE
199 RIVERSIDE AVE
BURLINGTON VT 05401

191 BURLINGTON CITY OF
ELECTRIC DEPT
585 PINE ST
BURLINGTON VT 05401

192 NEWTON GEORGE & JOANNE
199 RIVERSIDE AVE
BURLINGTON VT 05401

194 RYAN GEORGE & CHRISTINE
193 195 RIVERSIDE AVE
BURLINGTON VT 05401

196 STROMME JAN C & MARTHA F
P O BOX 526
COLCHESTER VT 05446

204 BRODY BARBARA E
183 RIVERSIDE AVE
BURLINGTON VERMONT 05401

207 BURLINGTON CITY OF
ELECTRIC DEPT
585 PINE ST
BURLINGTON VT 05401

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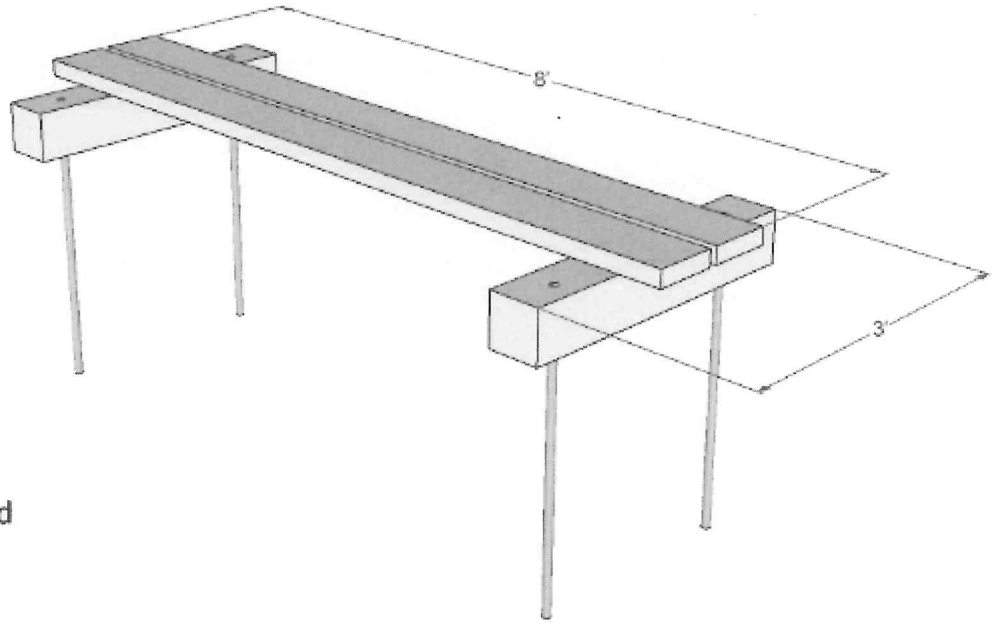
JAN 23 2003
DEPARTMENT OF PLANNING


Worksite #1
Individual Check Steps


Worksite #2
Re-route Trail

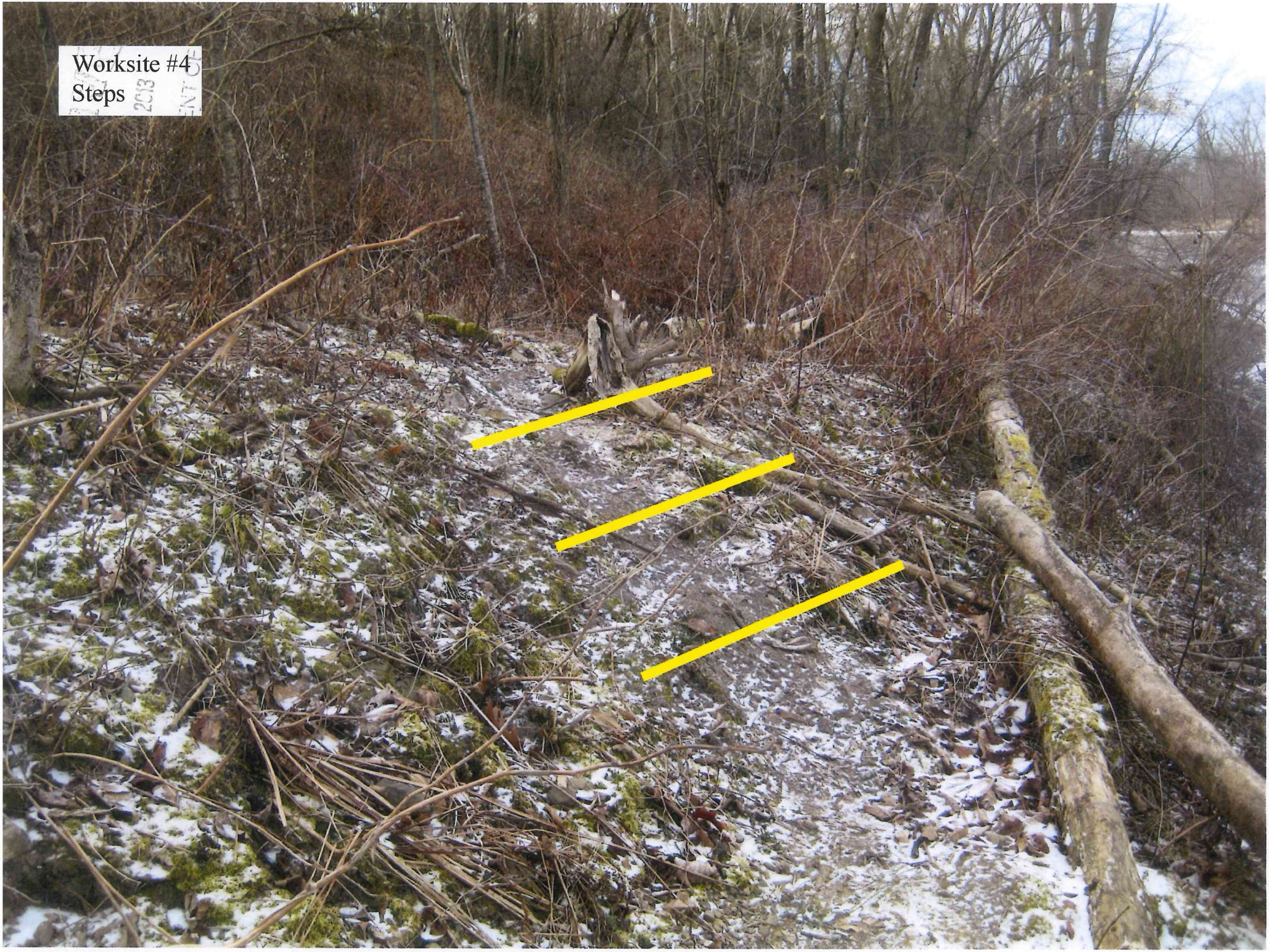

Worksite #2
Puncheon

Winooski Valley Park District
Puncheon Design



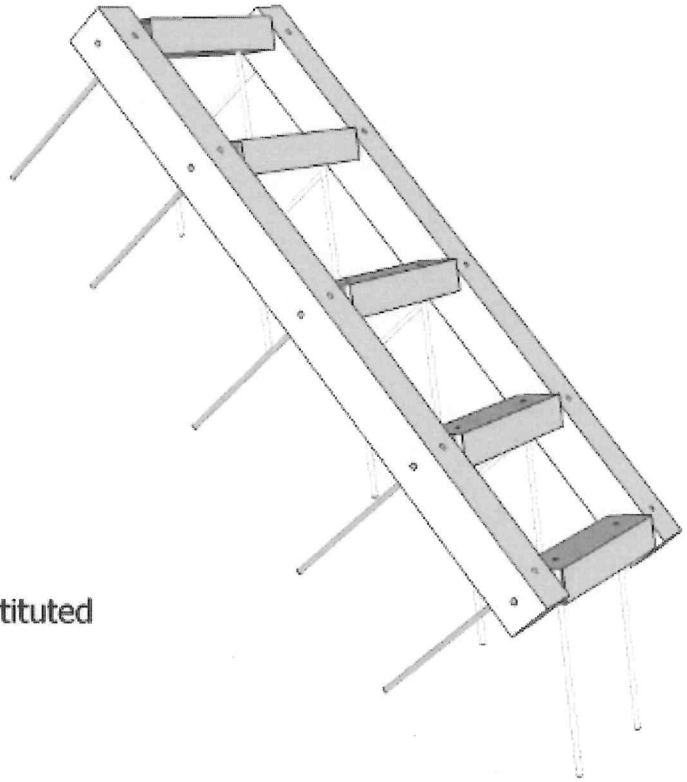
Materials:
(2) Sills 6" x 6" x 3' PT
(2) Decking 2" x 8" x 8' PT
(4) 3' lengths 1/2" rebar
-pre-drill holes. Can also be angled to help in areas known to flood.


Worksite #3
Re-route Trail/
TreePlanting


Worksite #4
Steps


Worksite #5 North Approach
Timberframe Steps

Winooski Valley Park District
10' Timberframe Staircase



Materials: * 6" x 6" can be substituted
Stringers: (2) 8" x 8" x 10'
Steps: (5) 8" x 8" x 3'
Rebar: 90'
(20) 3' @ 2 per stair
3' @ 5 per Stringer
(10) 18" to hold steps in
place from side of stringer

Worksite #5 South Approach
Check Steps

Riverwalk Trail
Check Step
Trail Construction Specifications

Trail Spec: Check Steps

Rationale: Check steps are constructed to minimize steep grades in trails. If the running grade exceeds 10%, a check step will prevent erosion and allow for easier hiking. The steps should be comfortable to walk up and down and built solidly to prevent movement over time.

Construction Specification:

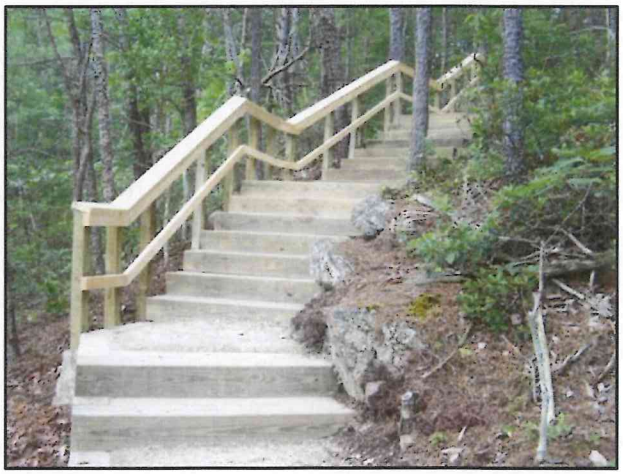
Material: Check steps at this site should be constructed from the 8x8 pressure treated timber that was salvaged from the existing bridge. This material is rot resistant and will provide solid footing for the steps.

Dimension: Check steps have a rise that range between 6 to 8 inches tall and a run that ranges from 12 inches to 10 feet. The run is determined by how steep the trail is. As the grade increases, the run measurement will decrease. This allows for a comfortable use by a range of hiking abilities.

Installation:

1. *Site Analysis:* Check steps are a series of rise and runs to gain vertical elevation. To determine the number of check steps needed, measure the total rise of the site and divide by an average step height of 8". This site will require a maximum of 12 steps to gain a maximum of 8 feet of rise. The total run for the site is 20', so the average run of each step will be 18".
2. *Step Installation:* The first step is installed perpendicular to the run of the trail and is rebared into place with 3, ½" pieces of rebar. The sides of the step are also installed and run back into the bank, allowing for the next courses of check steps to rest on top. Each step is backfilled with crushed stone and native soil. This pad of material becomes the stepping surface for each individual step. Measure back from the leading edge of the first step 18" and install the next step. Fill in the sides and continue upward.

Examples:



Hanging Rock State Park, NC (railing optional)


Worksite #5
Puncheon Location
Leading to New Bridge
Alignment


Worksite #6
New Bridge Construction

Winooski Valley Park District

Bridge Layout and Design

During Topical Storm Irene, the Winooski River rose to unprecedented heights. It flowed alongside the Riverwalk Trail in Winooski, forever changing the alignment of trail sections and displacing an already tenuous bridge structure.

After analyzing the site, it became clear that the existing bridge should be dismantled and replaced. The unique design has served its purpose, but does not fit the altered stream course.

This document, along with its attachments, explores how Timber & Stone, LLC proposes to dismantle the existing bridge, reuse its timber for a puncheon bridge and check steps, and construct a new bridge in its place.

Bridge Site

The flood waters were able to lift the bridge off its original site. Because the bridge was chained to a nearby tree, it did not float away. It is recommended for the new bridge to take the alignment outlined by the yellow line on the picture above.

As described in the attached Construction Specifications, the bridge's stringers should be made of steel and attached to a 10"x10" pressure treated sill that is rebared to the ground. This tactic was not used in the original construction and will prevent uplift during future high water events.

Existing Bridge with Proposed Layout (Yellow)

Bridge Design

The bridge's total length will be 40' and the clear span will be 32'. This dimension will require 2 steel stringers and one dimensional lumber center stringer.

The bridge's useable tread width will be 42" and the railing height will be 42".

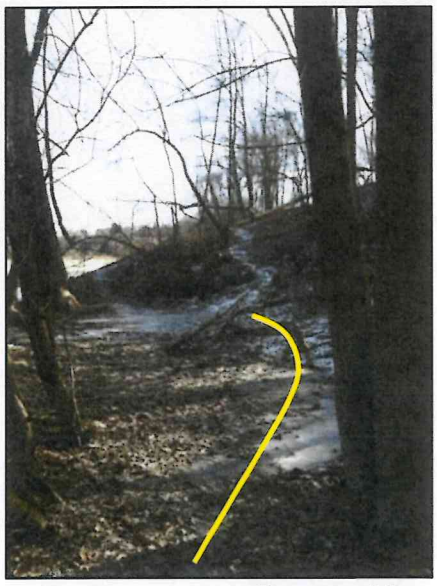
See Construction Specification for more details.

Proposed Bridge Design
35' Bridge in Stowe, VT

Puncheon Bridge and Check Steps

The trail's approach to the bridge entails a steep and unstable descent and seasonal wetland crossing. To provide an approach that is both safe and sustainable, a series of check steps and a series of puncheon bridges should be installed.

See Construction Specification for more details.



Proposed layout of the puncheon bridges and check steps.

Riverwalk Trail Bridge
Trail Construction Specification

Trail Spec: Bridges

Rationale: A timber bridge is used to cross either a gully or stream. The bridge should be constructed to match the use of the trail system and the character of the surrounding environment.

Construction Specification:

Material: Rot resistant lumber (ie: cedar, hemlock, white oak, locust, or PT) should be used. Careful attention should be paid to the dimension of lumber and its relevance to the overall span of the bridge.

Dimension: The dimension of the bridge should match that of the trail system and the anticipated users. The bridge outlined in this design should be built to provide a 42" wide useable tread.

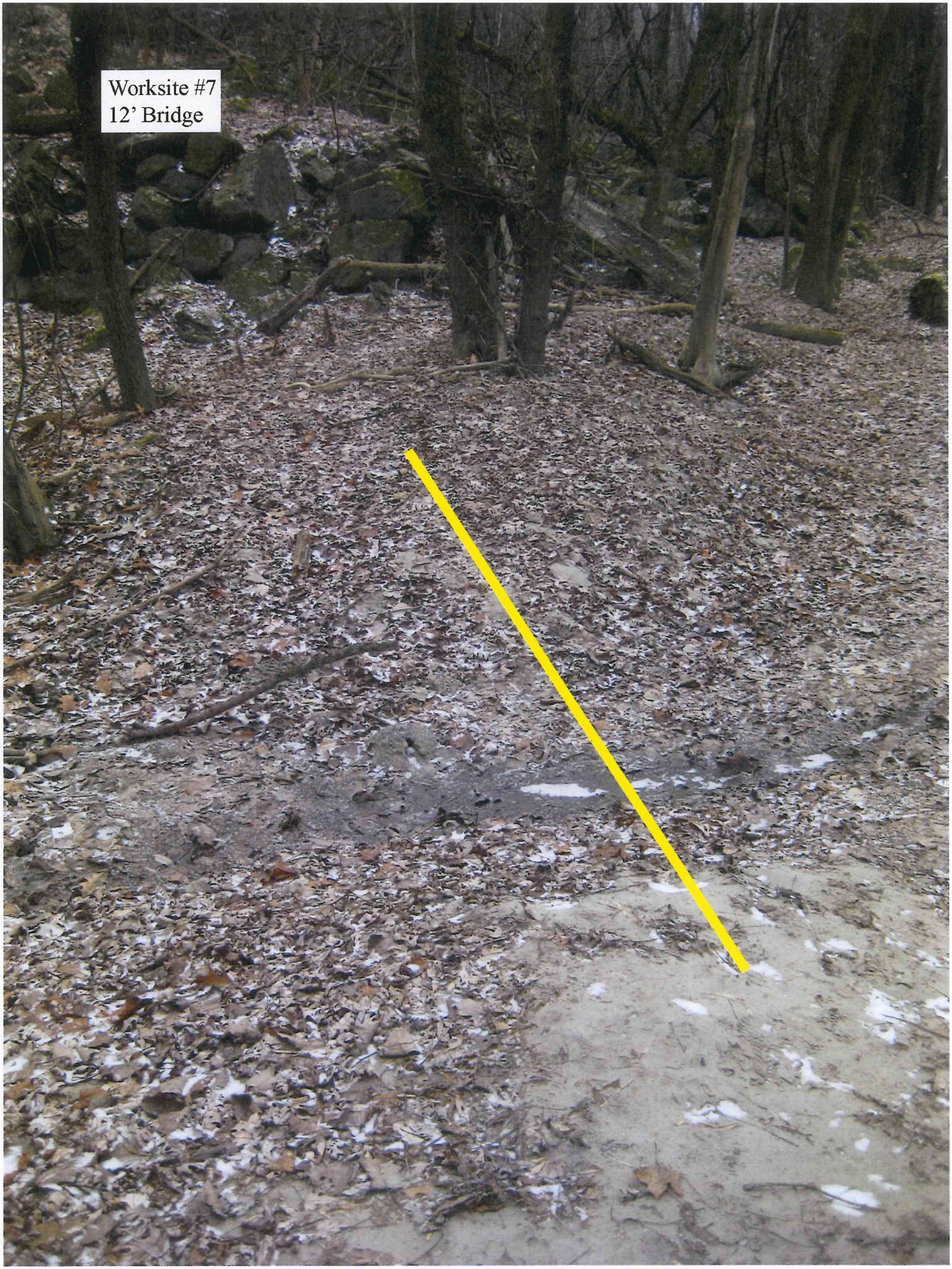
Installation:

1. *Sills:* The sills are the members of the bridge that support the stringers. They are 10"x10"x6' ground contact rated pressure treated timbers. The sills are laid parallel with the stream or gully, triangulated to ensure squareness, and attached to the ground using ½" x 3' rebar pounded flush with the sill. Each sill requires 4 rebar.
2. *Stringers:* This bridge will require 3 stringers. For a span of 40', it is recommended to use W16x31x40 steel stringers with C9x13.4 steel diaphragms. The diaphragms should be installed at four equally spaced points. The center stringer should be made out of 2, 2x12 pressure treated laminated together with Liquid Nails and secured with 16D galvanized nails. Each section of the center stringer should be no longer than 16'.
4. *Steel Laminates:* The top of each steel stringer should be laminated with pressure treated wood to accept the wooden decking. This is achieved by securing a 2x8 to the top of the stringer flange and a 2x6 under the stringer flange. The gap between the two timbers is filled with a ripped piece of pressure treated wood and secured with 2" timberloc screws.
5. *Decking:* It is recommended to use 2 x 6 rough sawn white oak lumber as the decking boards. The decking should extend 1 ½" beyond the edge of the stringers on either side and should be cut out around each railing post. There should be not less than ½" spacing on the decking. This will allow for sufficient water drainage and a longer lasting bridge structure. Every 9th decking board should be 10 feet long. These boards will accommodate the outrigger supports for the railing posts.
6. *Railing Posts*: 6x6 railing posts are installed every 5 feet with 3, 8" timberloc screws. A 4x4 angled brace is attached to the post with 2, 6" timberloc screws at the post and 2, 6" timberloc screws to the deck board.
7. *Railing Infill:* To accommodate building codes related to openings in railings, the infill openings should be no more than 4" wide. This is achieved by securing 16' galvanized goat panels to the railing posts with galvanized staples. A 2 x 4 cedar kick rail is installed 4" off the deck.
8. *Top Cap:* A 2 x 8 rough sawn cedar top cap is attached to the top of the railing posts with 4" timberloc screws. The top cap should extend beyond the last railing post by 4" and should be rounded.

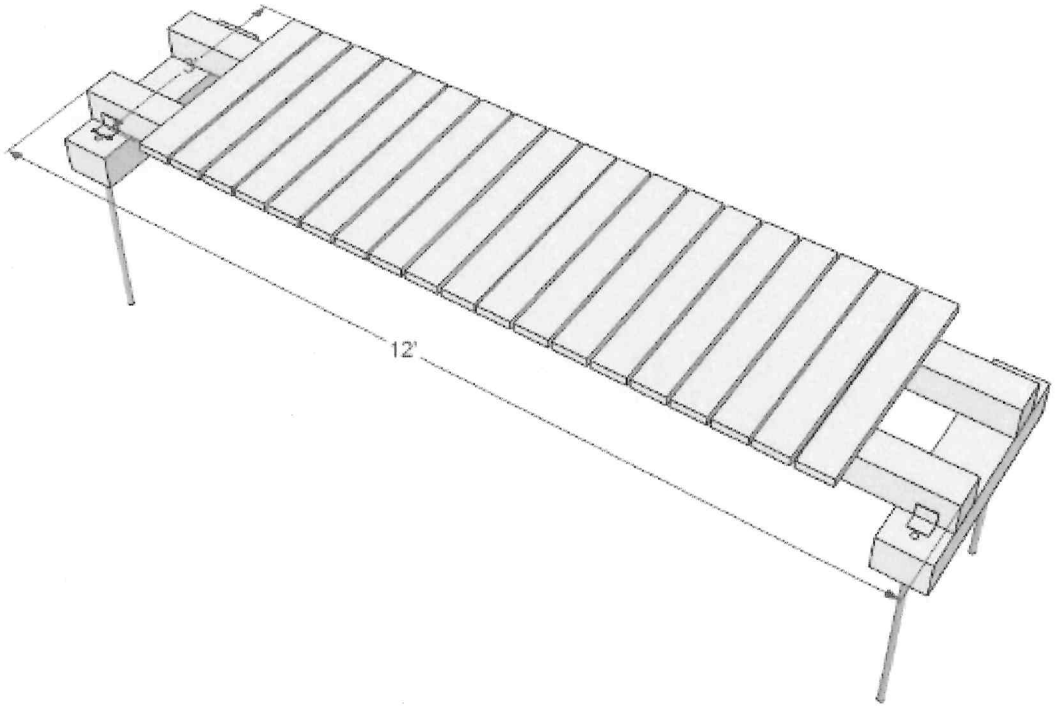
Riverwalk Trail Bridge
Trail Construction Specification

Example:

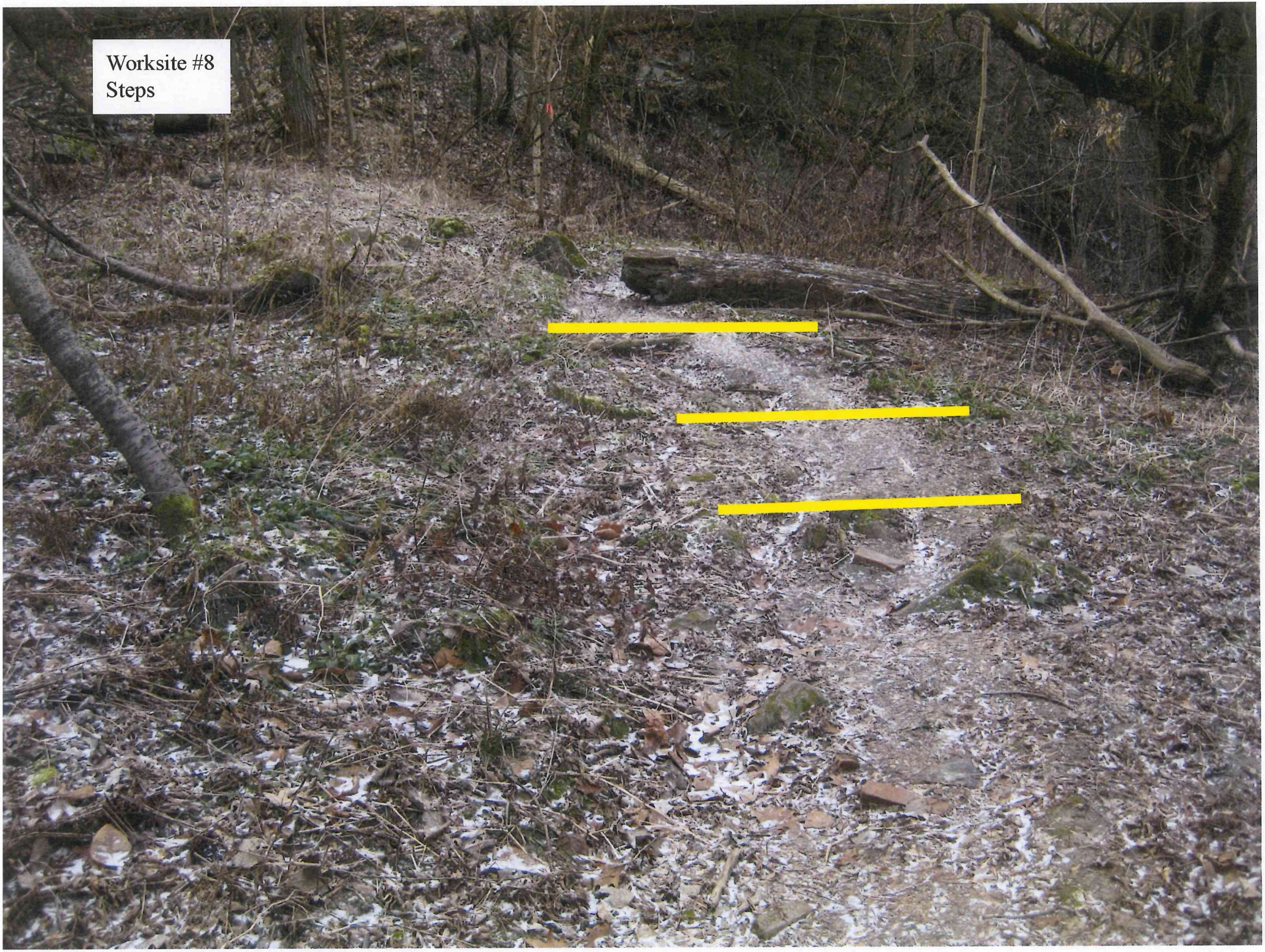
Mill Trail, Stowe, VT


Worksite #7
12' Bridge

Winooski Valley Park District
12' Bridge Design w/ 6" x 8" Footings



Materials:
(4) 1/2" rebar 3' long
Sills : (2) 6" x 8" x 3' PT
Stringers : (2) 6" x 6" x 12'
Decking : (19) 2" x 6" x 3'
Braces : (4) 2 1/4" x 3'


Worksite #8
Steps


Worksite #9
12' Bridge